WHAT IS CLAIMED IS:

1. A lead-free solder comprising an alloy composition composed mainly of tin,

said alloy composition containing 0.002 to 0.015% by mass of phosphorus.

2. The lead-free solder according to claim 1, wherein said alloy composition comprises 2.0 to 5.0% by mass of silver, 0.01 to 2.0% by mass of copper, and 0.002 to 0.015% by mass of phosphorus with the balance consisting of tin.

3. The lead-free solder according to claim 1, wherein said alloy composition comprises 0.01 to 2.0% by mass of copper and 0.002 to 0.015% by mass of phosphorus with the balance consisting of tin.

4. A connection lead comprising: a copper strip or other strip conductor; and a plating provided on at least one side of the strip constructor, said plating being formed of a lead-free solder composed mainly of tin,

said plating containing 0.002 to 0.015% by mass of phosphorus and having a shape such that the plating in the widthwise direction of the strip conductor has a bulge as viewed in section with the apex being located at a proper position in the widthwise direction of the strip conductor.

5. The connection lead according to claim 4, wherein the bulge is in the form of an arc, a triangle, or stairs of which the apex is located at a proper position in the widthwise direction of the strip conductor.

6. The connection lead according to claim 4, wherein a plurality of apexes of said type are provided in the widthwise

direction of the strip conductor.

7. The connection lead according to claim 4, wherein the strip conductor on its both sides are exposed or are covered with the lead-free solder constituting the plating.

8. An electrical component structure comprising a connection element formed of a lead-free solder composed mainly of tin,

said connection element containing 0.002 to 0.015% by mass of phosphorus.

9. The electrical component structure according to claim 8, which is a solar battery that, in a structure of a connection between a power generation wafer in its predetermined region and a connection lead, has a plating as the connection element provided on the surface of the connection lead and has been sealed with ethylene-vinyl acetate.

10. The electrical component structure according to claim 8, which is a printed board that has in its predetermined sites soldered portions, formed by flow or reflow, as the connection element.

11. The electrical component structure according to claim 8, which is a ball grid array-type printed board that has, as the connection element, a plurality of solder balls, functioning as a terminal portion, arranged in a predetermined site.

12. The electrical component structure according to claim 8, which is a single wire, a twisted wire, or a strand for a served shield, for electric wires, has on its surface a plating as the connection element.

13. The electrical component structure according to claim 8, which is a coaxial cable comprising: an internal conductor of a single wire or a twisted wire; an external conductor provided on the internal conductor through an insulator; and a plating as the connection element provided on the surface of the internal conductor and the surface of the external conductor.